IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Watts

Serial No.: 08/568,904

Filed: 12/07/95

For: REAL-TIME THERMAL MANAGEMENT FOR COMPUTERS

TI-20567

Art Unit: 2781

Examiner: Dharia

REPLY BRIEF
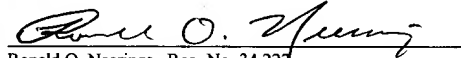
Assistant Commissioner for Patents

Washington, D.C. 20231

Dear Sir:

In support of his appeal of the Rejection of claims in the above-referenced application, Appellant respectfully submits herein his Reply Brief.

Appellant's Reply

Appellant respectfully traverses the Examiner's statement in his Answer (page 9, lines 2-6) that since "Gephardt teaches detected activities and lists some of the type that are detected … Gephardt reads on Appellant's claim limitations of detecting 'critical activity'".

While Appellant agrees with the Examiner that Gephardt makes the general statement that "other selected activities may be programmed as either primary or secondary activities", nowhere does Gephardt teach or suggest that "critical activity" is a type of activity that can be detected. It is improper for the Examiner to use a generic statement of "activity" and thereafter use the statement to anticipate "critical activity" when there is no disclosure in Gephardt that supports the Examiner's statement. Moreover, there is no teaching or suggestion in Gephardt that would make such a modification to Gephardt obvious without the improper hindsight provided by Appellant's disclosure.

In response to the Examiner's arguments set forth on page 9, line 7 - page 10, line 2 of the Answer, Appellant reaffirms his agreement with the Examiner's analysis of Hollowell as set forth in the Office Action dated April 28, 1998 (page 3, line 3 – page 4, line 6). Appellant also agrees with the Examiner that Hollowell does not teach stopping the clock signals when a detected temperature rises above a reference temperature level (page 4, lines 4-6). Appellant further agrees with the Examiner that Hollowell does not teach a monitor stopping the clock signals to the CPU only when the CPU is processing non-critical I/O (page 4, lines 16-18).

While Kikinis teaches that it is known to selectively stop clock signals when the detected temperature rises above a reference temperature level, Kikinis fails to teach or suggest that the selective stopping is performed only when the monitored temperature is **at or above** a selected reference **and said CPU is not processing critical I/O**. Moreover, Kikinis fails to teach or t53suggest any modification of the clock signal to the processor for any reasons other than temperature. Indeed, the Kikinis and Hollowell references, alone or in combination, fail to teach or suggest that critical I/O will, or should, affect the performance of the temperature reduction mechanism.

Gephardt teaches, in the Background of the Invention:

> Although a variety of prior art system have been proposed in which the power management unit causes the frequencies of selected clock signals to be raised if certain system activities are detected and to be lowered if other system activities

are not detected, **such systems typically do not treat the detected activities differently. As a result, the efficiency of these systems may be somewhat limited since many detected activities have different associated impacts upon power consumption** (col. 2, lines 23-31)(emphasis added).

Assuming, arguendo, that Gephardt teaches a power management architecture that monitors CPU activity and, dependent upon one of the classifications of activity being detected on table II (col. 9, lines 14-25), can control the frequency of the CPU clock signal and system clock signal as suggested by the Examiner, Gephardt fails to teach or suggest any means for detecting "critical activity". Moreover, fails to mention "critical activity" at all in any context. Furthermore, to the extent that "activity" is defined in Gephardt, it never associates "temperature" with an "activity" classification.

Further, Gephardt teaches that clock speed is decreased in response to reduced levels of activity – thus lower clock speed for lower level of activity – and higher levels of speed for higher levels of activity. In contrast, the present invention stops (or reduces) clock speed "when said clock speed rises to a level at and above a selected reference temperature level and said CPU is not processing critical I/O". It would not have been obvious to one having ordinary skill in the art at the time the invention was made to combine Gephardt with Kikinis and Hollowell and modify the resulting device so that the resulting temperature reduction mechanism will selectively stop (or reduce) the clock signal to the CPU only when the monitored temperature is at or above a selected reference and said CPU is not processing critical I/O.

In proceedings before the Patent and Trademark Office, "the Examiner bears the burden of establishing a prima facie case of obviousness based upon the prior art". In re Fritch, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992) (citing In re Piasecki, 745 F.2d 1468, 1471-72, 223 USPQ 785, 787-88 (Fed. Cir. 1984). "The Examiner can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references", In re Fritch, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992)(citing In re Fine, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988)(citing In re Lalu, 747 F.2d 703, 705, 223 USPQ 1257,

1258 (Fed. Cir. 1988)). The Examiner has not met this burden in the present case. The Examiner has not provided any evidence of knowledge generally available to one of ordinary skill in the art at the time of the invention that would lead that individual to combine the relevant teachings of the Kikinis, Hollowell and Gephardt references. Moreover, even if there were such teaching, the Examiner provides no teaching or suggestion, without the improper hindsight provided by Appellant's disclosure, for the additional modifications that would be required by any combination device in order for it to be able to obviate the claimed invention.

Even if the cited art were to disclose components of the device in issue, case law holds that it is insufficient that the prior art discloses the components of the device in issue, either separately or used in other combination; there must be some teaching, suggestion, or incentive to make the combination made by the inventor. Northern Telecom, Inc. v. Datapoint Corp., 908 F.2d 931, 934, 15 USPQ2d 1321, 1323 (Fed. Cir. 1990). Moreover, "obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. Under section 103, teachings of references can be combined ONLY if there is some suggestion or incentive to do so." ACS Hosp. Systems, Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). The Examiner in the present case has not provided any teaching or suggestion from the art supporting the combination.

Moreover, the mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. In re Laskowski, 871 F.2d 115, 10 USPQ2d 1397 (Fed. Cir. 1989); In re Gordon, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). Simply put, the prior art does not teach or suggest the modifications necessary to attain Appellant's claimed invention. Accordingly, the Examiner has improperly used hindsight and Appellant's disclosure to obviate his claimed invention. It is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the prior art so that the claimed invention is rendered obvious. In re Gorman, 933 F.2d 982, 987, 18 USPQ2d 1885, 1888 (Fed.Cir.1991). See also Interconnect Planning Corp. v. Feil, 774 F.2d 1132, 1138, 227 USPQ 543, 547

(Fed.Cir.1985). Moreover, "One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention." In re Fine, 837 F.2d 1071, 1075, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988). The 35 U.S.C. §103 rejection is overcome. Just because something is desirable (especially in hindsight) does not mean it is obvious.

In response to the Examiner's analysis on page 10, line 17 - page 11, line 8, Appellant repeats his argument that the Chen reference teaches a temperature control system which employs feedback to adjust the output count signal (col. 2, lines 43-44) in which NO TEMPERATURE MEASUREMENTS ARE NEEDED OR MADE (col. 2, lines 44-45). Chen specifically states, "determining a piecewise **estimate of CPU temperature change** as a function of time over an accumulated operating history of the CPU" (col. 7, lines 8-10)". Thus, Chen makes a piecewise ESTIMATE of CPU temperature CHANGE. It does not teach or suggest, **"means for predicting temperature levels associated with the operation of said central processing unit within said computer"** and **"means for using said prediction for automatic control of temperature within said computer, said temperature control remaining transparent to a user of said computer"**, as required by Claim 17, or **"means for predicting temperature levels associated with the operation of said computer"** and **"means for using said prediction for automatic temperature control within said computer, said temperature control remaining transparent to a user of said computer"**, as required by Claim 18.

Thus, it would not be obvious to one of ordinary skill in the art without improper hindsight to combine the teachings of Chen with Hollowell and Kikinis, and thereafter modify the resulting apparatus to be an apparatus that both samples the temperature within the computer (or CPU) and there after uses the temperature sample in predicting temperature levels associated with the operation of a computer (or CPU).

As a result, any combination of the Hollowell, Kikinis and Chen references fails to teach or suggest, "means for sampling a temperature level associated with the operation of a central processing unit within said computer", "means for predicting temperature levels associated with the operation of said central processing unit within said computer" and "means for using said
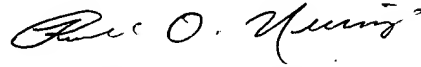
prediction for automatic control of temperature within said computer", as required by Claim 17, or "means for sampling a temperature level associated with the operation of said computer", "means for predicting temperature levels associated with the operation of said computer" and "means for using said prediction for automatic temperature control within said computer", as required by Claim 18.

Independent Claim 21 requires and positively recites, "a central processing unit (CPU)", "means for sampling a temperature level within said apparatus" and "**means for automatically adjusting the processing speed of said central processing unit (CPU) by modifying the clock signal utilized by the central processing unit (CPU) to maintain said temperature level within said apparatus below a selected reference temperature level when said CPU is not processing critical I/O**".

As stated above, Chen teaches a temperature prediction mode in which in which NO TEMPERATURE MEASUREMENTS ARE NEEDED OR MADE (col. 2, lines 44-45).. Kikinis, on the other hand, discloses a device in which temperature measurements ARE MADE – i.e., which selectively stops clock signals when the detected temperature rises above a reference temperature level. Kikinis fails, however, to teach or suggest that the selective stopping be performed only when the monitored temperature is at or above a selected reference and said CPU is not processing critical I/O. Kikinis also fails to teach or suggest any modification of the clock signal to the processor for any reasons other than temperature. Any combination of Chen, Kikinis and Hollowell, fails to address the discrepancies between, or justify any combination of the Chen and Kikinis (regarding temperature measurements and temperature prediction) with the Hollowell reference. Moreover, none of the references (alone or in combination) teach or suggest that critical I/O will, or should, affect the performance of the temperature reduction mechanism.

For the above reasons, favorable consideration of the appeal of the Final Rejection in the above-referenced application, and its reversal, are respectfully requested.

Respectfully submitted,

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